LA-UR-20-29875
Approved for public release; distribution is unlimited.

Title: Flanged Tritium Waste Containers Waste Characterization Information for Container FTWC-229

Author(s): Kelly, John C.

Intended for: Report

Issued: 2020-12-01

Flanged Tritium Waste Containers

Waste Characterization Information for Container FTWC-229

December 1, 2020

Managed by Triad National Security, LLC for the U.S. Department of Energy's NNSA

Abstract

The following information packages present the radiological data as well as physical properties of the four Flanged Tritium Waste Containers currently stored at TA-54, Area G. Also included are summaries of the contents of each container (including waste logs) as well as photographs of the inner and outer portions of each container.

ETWC 229

Tritium curies	34,000

per year decay fraction for tritium	0.94531
Ci/gram	9619

		Duration years	Tritium curies
Start Date	Aug-07		34,000
Target date	Jan-11	3.36	28,149
	Feb-11	3.44	28,018
	Mar-11	3.52	27,887
	Apr-11	3.61	27,756
	May-11	3.69	27,627
	Jun-11	3.77	27,497
	Jul-11	3.86	27,369
	Aug-11	3.94	27,241
	Sep-11	4.02	27,113
	Oct-11	4.11	26,987
	Nov-11	4.19	26,860
	Dec-11	4.27	26,735
	Jan-12	4.36	26,610
	Feb-12	4.44	26,485
	Mar-12	4.52	26,362
	Apr-12	4.61	26,238
	May-12	4.69	26,116
	Jun-12	4.77	25,994
	Jul-12	4.86	25,872
	Aug-12	4.94	25,751
	Sep-12	5.02	25,631
	Oct-12	5.11	25,511
	Nov-12	5.19	25,391
	Dec-12	5.27	25,273
	Jan-13	5.36	25,155
	Feb-13	5.44	25,037
	Mar-13	5.52	24,920
	Apr-13	5.61	24,803
	May-13	5.69	24,687
	Jun-13	5.77	24,572
	Jul-13	5.86	24,457
	Aug-13	5.94	24,343
	Sep-13	6.02	24,229
	Oct-13	6.11	24,116
	Nov-13	6.19	24,003
	Dec-13	6.27	23,891

ATTACHMENT B. TSE MODERATE/HIGH-ACTIVITY TRITIUM-CONTAMINATED WASTE LOG

Circle one: Type A (< 500 Ci/container) Type A (< 1080 Ci) Type B (> 1080 Ci) Non Compliant

Container ID #: WETF-FTWC-229 Pre-Inspection: (signature) Ward Rupprecht Date: 8/1/07

Container Description/Model/Type: Flanged Tritium Waste Container

Container Barcode #: _____ Tare Weight: 263.0 Kg

Container Capacity (m³): .195 Total Weight: see next page

Date	TA/Bldg/Rm.	Bag/Item #	Description	Weight (kg)	Accum. Weight (kg)	Item Activity (Ci)	Inventory Method	Cumulative Activity (Ci)	Waste Packager
8/1/07	16/205/116	1	AL-MI-L0022	22.0	285.0	15000	A	15000	WR
		2	AL-MI-L008	22.0	307.0	15800		30800	
		3	Dryer 1-2-C	8.0	315.0	0		30800	
		4	Dryer 2-2-B	8.0	323.0	0		30800	
		5	Dryer 1-1-C	28.0	351.0	700		31500	
		6	MSD2-2	7.5	358.5	900		32400	
		7	MSD2	7.5	366.0	500		32900	
		8	Cryo MS2	0.5	366.5	700		33600	
		9	MSD1	7.5	374.0	400		34000	
		10	Actuators: (1 bag)	3.0	377.0*	N/A	N/A	34000	
			Model F-244 Lot B1135					34000	
			Model FLT B1109 23					34000	
			304L-112 B1135					34000	

Total Activity: _____ Total Accum. Weight: _____

Container Closed by: _____ Date: _____

OI/WI/Tech Manual used to close container: See Next page

Verification of closure by WMC: _____ Date: _____

Container ready for shipment: (signature) _____ Date: _____

Unique ID of torque wrench used (if needed): _____ Calibration Expiration Date: _____

*114

ATTACHMENT B. TSE MODERATE/HIGH-ACTIVITY TRITIUM-CONTAMINATED WASTE LOG

Circle one: Type A (< 500 Ci/container) Type A (< 1080 Ci) Type B (> 1080 Ci) Non Compliant

Container ID #: WETF-FTWC-229 Pre-Inspection: (signature) Ward Rumpelt Date: 8/1/07

Container Description/Model/Type: Flanged Tritium Waste Container (FTWC)

Container Barcode #: _____ Tare Weight: 263.0 Kg

Container Capacity (m³): .195 Total Weight: 377.0 Kg 830#

Date	TA/Bldg/Rm.	Bag/Item #	Description	Weight (kg)	Accum. Weight (kg)	Item Activity (Ci)	Inventory Method	Cumulative Activity (Ci)	Waste Packager
8/1/07	16/205/116	10	304-120 B1135	5.5	377.0	N/A	N/A	34000	WR
			Model FLTB110812						
			2754						
			2545						
			2810						
			2576						
			2551						
			X-018					34000	

Total Activity: 34000 Ci Total Accum. Weight: 377.0 Kg

Container Closed by: Ward Rumpelt Date: 8/7/06

OI/WI/Tech Manual used to close container: WETF-TM-335 Rev A

Verification of closure by WMC: Albert Stadelmann Date: 8-8-07

Container ready for shipment: (signature) _____ Date: _____

Unique ID of torque wrench used (if needed): 034741 Calibration Expiration Date: 1/2/08

$\frac{34000}{114} = 298$ Ci/kg

Estimated and Actual Contents Data

		Inventory Amount (cg) per DOE memo	Re-calorimeter required?	Current Mass Amount (cg)	Contents volume (Liters)	Comments	Curies (10,000/g)	Cummulative curies	Weight Estimate (kg)	Weight Actual (kg)
	MASS Items	1/31/06		5/23/2007						
1	AL-M1-L0022	150	NO	150	13.5	intact	15000	15000	21.4	22.0
2	AL-M1-L008	158	NO	158	13.5	intact	15800	30800	21.4	22.0
3	DRYER-1-2-C	0	NO	0	10.3	6dx19	0	30800	28.0	8.0
4	DRYER-2-2-B	0	NO	0	10.3	6dx19	0	30800	28.0	8.0
5	DRYER-1-1-C	7	NO	7	10.3	6dx19	700	31500	28.0	28.0
6	MSD2-2	10	NO	9	5.2	5dx16	900	32400	8.0	7.5
7	MSD2	5	NO	5	5.2	5dx16	500	32900	8.0	7.5
8	CRYO2MS1	8	NO	7	3.8	1 gal can	700	33600	2.3	0.5
9	MSD1	4	NO	4	5.2	5dx16L	400	34000	8.0	7.5
	Total	342		340	77.3		34000	34000	153.1	111.0
	Actuators									
1	Model-F-244 Lot. No. B1135	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
2	Model F LT B1109 23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
3	304L-112 B1135	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
4	304L-120 B1135	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
5	Model F LT B1108 12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
6	2754 (last digit unclear)(Nerp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
7	2545 (Nerp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
8	2810 (Nerp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
9	2576 (Nerp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
10	2551 (Nerp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
11	X-018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	
								total	5.5	3.0

Grams Total = 3.42 | 3.40 **Note: 10g maximum**

Grams Total =	3.42	3.40	**Note: 10g maximum**
Void Space calculation (liters)	Estimate	Actual	
Required void space =	44.46	44.2	
Fatwac volume =	195	195	
Contents volume =	77.3	77.3	
Void space total =	117.7	117.7	
Remaining Void Space Allowable =	73.24	**73.50**	

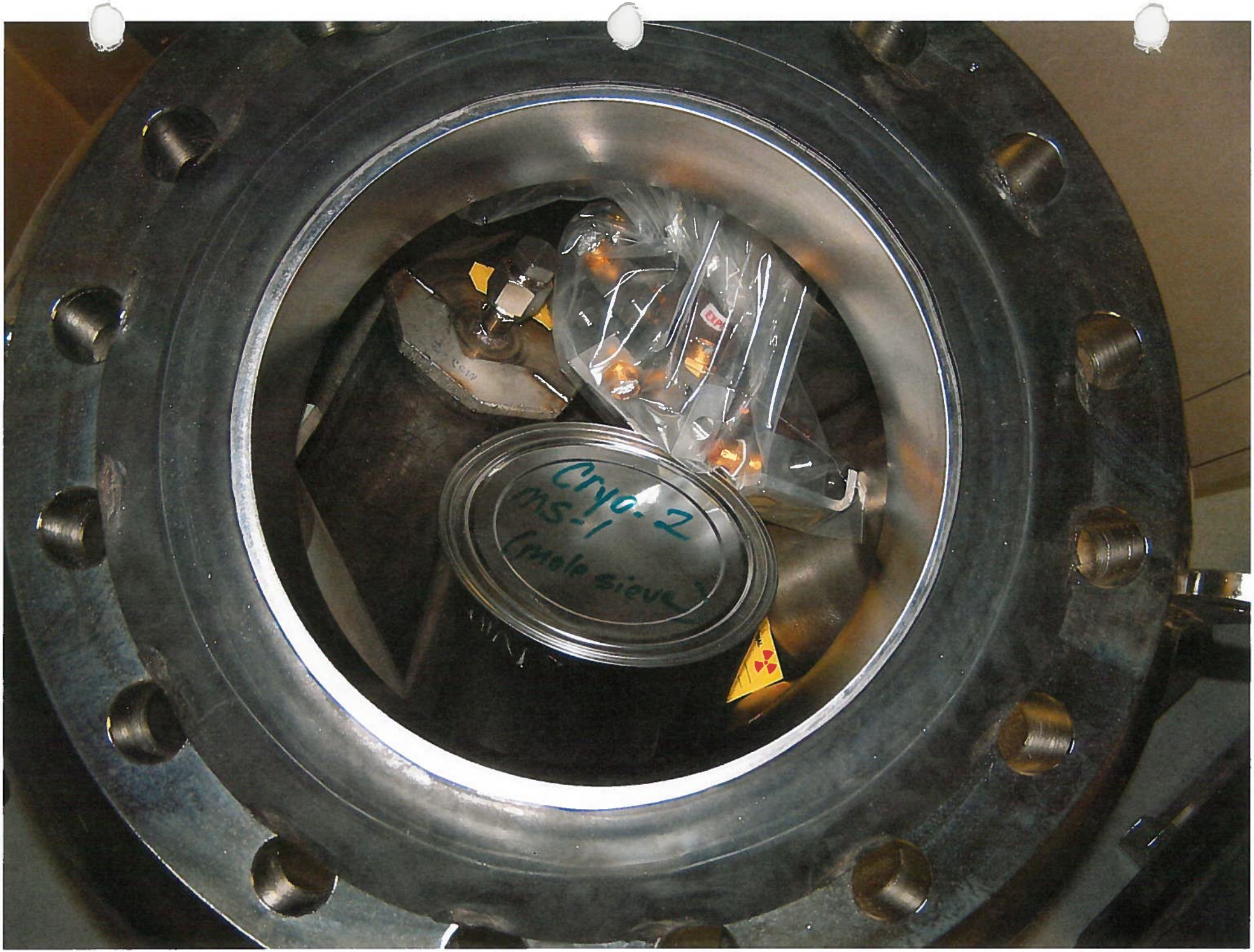
Weight Calculation (kg)	Estimate	Exact at Loading
FATWAC =	270	
Contents =	159	114.0
Total FATWAC + contents	429	
Wt Allowance 85 gallon drum =	440	440
Remaining Weight Allowable =	11	

Additional Considerations

MASS items approved by DOE for disposal?	Yes
All materials been characterized?	Yes
Is inerting required?	No
Classified contents?	No


WETF-FTWC-229-OP
High-Activity Tritium
Contaminated Waste
Per TSF-OP-15
Contains: WETF-FTWC-229


WETF-FTWC-229


Cryo. 2
MS-1